Express Mail No. EU865164570US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#11/Response Amd 10/21/03

IN RE:

APPLICATION OF	:	Richard Cramer, Robert Jilek, Qian Liu, Stefan Güessregen, Bernd Wendt, and Katherine Andrews
TITLE	:	A Method For Searching Heterogenous Compound Databases Using Topomeric Shape Descriptors and Pharmacophoric Features
SERIAL NO.	:	09/825,448
FILING DATE	:	April 2, 2001
ART UNIT	:	2863
EXAMINER	:	Anthony T. Dougherty
ATTORNEY DOCKET NO.	:	3017-40
CUSTOMER NO.	:	22448

TO: Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Response To Office Action Dated April 9, 2003

Dear Sir:

Applicants hereby respond to the Office Action dated April 9, 2003 in which the Examiner rejected claim 1 and allowed claim 2. Applicants appreciate the Examiner's review of Applicants' response with respect to the prior rejection of claim 2 and the subsequent allowance by the Examiner of that claim. Applicants present below their response to the Examiner's continuation of the rejection of claim 1 and, in order to have this Response

considered, have timely filed a Request for Continued Examination (RCE) along with the appropriate fee. A request for extension of time to respond has also been timely filed with this Response.

The Examiner has set forth both his reasoning for the rejection and for rejecting the arguments Applicants presented in their Response to the first office action. Applicants will first address the continued grounds for rejection and will then address the Examiner's response to Applicants' arguments in the Response to the first office action.

Rejection Response:

The Examiner has continued the rejection of claim 1 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,240,374 to Cramer et al.

Applicants appreciate the thoughtful comments of the Examiner in his reading of the Cramer reference, but respectfully submit that the Examiner has arrived at the wrong conclusions about what is disclosed in the Cramer reference. Applicants attempted to clarify the distinction between the teachings of the Cramer reference and the present application in their first Response. Given the Examiner's remarks in the continuation of the rejection, it is apparent to Applicants that they did not convey clearly enough what they believe to be the relevant distinctions. Applicants would appreciate the Examiner's review of Applicants' position as set out below.

The Cramer reference teaches the construction of a virtual library in which is stored information about: 1) different chemical transformations (reactions); and 2) the reagents which could participate in those reactions. The critical reagent information stored is the validated molecular metric description of the three dimensional characteristics of the potential side chain

(structural variation) which each reagent could contribute to a synthesized molecule. Most importantly, no database of molecules is stored. It is true that, conceivably, a list of all potential molecules which could be combinatorially synthesized using the chemical transformations and side chains contained in the virtual library could be produced (something on the order of 10^{11}-10^{12} molecules presently) but that would be missing the point of constructing the virtual library. The virtual library is constructed as it is so that all possible molecules do not have to be examined in order to find those that match search criteria. Only the information stored about the molecular parts need be searched; the list of all possible molecules does not exist.

Thus, when the examiner states that Cramer teaches "...defining fragments of a database molecule according to a defined set of rules...", Applicants submit that the Examiner is viewing the process backwards. There are no database molecules from which fragments can be defined. There are only the fragments. The citations to Cramer referenced by the Examiner are all consistent with this fact. Perhaps the preamble to claim 1 of the Cramer reference makes this most clear:

> A computer-based method for generating a virtual library of component parts and their characteristics in which all possible product molecules combinatorially derived from the component parts can be searched, without the necessity of generating the product structures during the search, for product molecules having desired properties by searching through only a combination of the descriptors of the component parts of the product molecules comprising the following steps...

The situation in the present application is exactly opposite to the teachings in the Cramer

reference. This is what Applicants intended to convey as stated in their Response to the first office action:

> "...in the present application, a database molecule is one found in a heterogenous database of actually existing molecules such as those available commercially. (See first full paragraph on page 6). The database contains the description of each molecule, not its constituent parts (emphasis added). There is simply no equivalent database of existing molecules taught in Cramer."

Applicants will address the definitional issue raised by the Examiner with regard to what is meant by a heterogeneous compound database below. However, whether or not the Examiner accepts Applicants' definition of a heterogeneous compound database, the important point is that such a database referenced in the application is a database of compounds (entire compounds), not constituent parts of compounds. The Cramer reference does not teach dealing with such a database of compounds and, therefore, can not anticipate the present application.

Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 1 and permit the patent to issue.

Examiner's Response to Arguments:

The Examiner states in part:

> "...the examiner acknowledges that the applicant intends for a heterogenous compound database as described in the preamble of claim 1 to be one of actually existing molecules such as those available commercially, however, without an explicit definition of the term "heterogenous compound database" within the specification the examiner is obligated to consider this term by its ordinary meaning..."

Applicants acknowledge that a definition of the term "heterogenous compound database" is not explicitly set forth in the application as a defined term. However, Applicants respectfully submit that the presence of a definition in a defined term is unnecessary to understand the meaning Applicants ascribe to the term in the application and that references in several parts of the application make abundantly clear the definition Applicants intended:

Field of the Invention:

"...In particular the invention concerns a method for searching databases of commercially available compounds which may or may not share any common synthetic linage."

Description of Related Art:

"...In the day to day world of pharmaceutical research, large assemblages of available molecules can be commercially obtained. These assemblages are not the result of any particular combinatorial synthesis but rather represent the assembly of a wide range of molecules from many different sources and syntheses, some known, some unknown. Therefore, these assemblages of molecules can be characterized as heterogeneous."

BRIEF SUMMARY OF THE INVENTION

"Databases which contain the structures of a heterogenous assembly of available molecules can be searched..."

Topomeric 3D Searching:

"Different heterogenous databases of compounds store compound structures in different formats such as SMILES, SLN, or an MDL format. Many software programs are available for interconverting the structures from one format to another. For the present

application, the inventors use UNITY to convert compound information to SLN (Sybyl Line Notation) format. Compound information is then transferred to the CONCORD software program. CONCORD generates the three dimensional structure of the molecule. The starting point for topomeric searching of compounds listed in a heterogenous database are the CONCORD generated three dimensional structures of the database molecules and the query molecule. These structures are provided as input to the software programs set forth in the Appendices to the present disclosure."

Finally, Applicants submit that the whole point of the methodology described in the application can only be understood in light of the intended meaning of heterogeneous compound databases as databases of commercially available compounds. Given the above citations and the general discussions throughout the application, Applicants believe that there is no doubt as to the meaning intended by Applicants, and that no knowledgeable reader of the Cramer reference or of a patent issued on the present application will be mislead as to exactly what is meant by the term in the application. Claims must be read in light of the meanings taught in the specification. Applicants submit that the meaning of the terms in claim 1 is clear in view of the teachings of the specification. Accordingly, Applicants request that the Examiner acknowledge the intended meaning and recognize that the term does not describe any teaching and is not used in any teaching in the Cramer reference.

Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claim 1 and permit the patent to issue.

October 9, 2003

Respectfully submitted,

Laurence Weinberger
Attorney for Applicants
USPTO Reg. No. 27,965
Suite 103, 882 S. Matlack St.
West Chester, PA 19382
610-431-1703
610-431-4181 (fax)
larry@lawpatent.com